



SUMMARY OF THE GLOBAL CONFERENCE ON OCEANS AND COASTS AT RIO+10: TOWARD THE 2002 WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT IN JOHANNESBURG 3-7 DECEMBER 2001

The Global Conference on Oceans and Coasts at Rio+10: Toward the 2002 World Summit on Sustainable Development in Johannesburg took place from 3-7 December 2001 at the headquarters of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in Paris, France. The Conference, which was originally initiated by nongovernmental organizations (NGOs), was co-organized by UNESCO's Intergovernmental Oceanographic Commission (IOC) and the University of Delaware's Center for the Study of Marine Policy (CSMP), with the support of numerous international and national organizations with an interest in oceans. The Conference was attended by more than 400 participants from over 60 countries, including 13 ministers and vice-ministers and ocean experts from governments, intergovernmental organizations (IGOs), NGOs, academic and scientific institutions, and industry.

Conference participants sought to: provide an overall assessment of progress achieved on oceans and coasts in the ten years since the UN Conference on Environment and Development (UNCED); identify new and continuing challenges; examine cross-cutting issues among various ocean and coastal sectors; consider options for concerted action on outstanding cross-sectoral issues; and provide recommendations for the oceans and coasts agenda of the World Summit on Sustainable Development (WSSD).

The Conference was organized into 17 panels, with presentations on selected topics followed by discussion periods. Eight Working Groups composed of NGO, IGO and government representatives also met in morning, lunchtime and evening sessions throughout the week to assess information presented by the panels and prepare recommendations on: harmonizing international agreements; targeting donor aid; assessing and managing the marine environment; marine biodiversity and protected areas; integrated ocean and coastal management; sustainable fisheries and aquaculture; regional and small island perspectives; and capacity building. Outputs from the proceedings were contained in a Co-Chairs' Draft Concluding Statement and Working Group Draft Reports, which will be developed into a Co-Chairs' Summary to be presented in January 2002 to the WSSD PrepCom II, to inform the WSSD process. Future planned outputs also include a volume on ministerial perspectives presented at the Conference and several volumes and journals of position papers submitted to the Conference.

A BRIEF HISTORY OF INTERNATIONAL OCEANS AND COASTS POLICY AND MANAGEMENT

The United Nations Conference on Environment and Development, held in Rio de Janeiro, Brazil in 1992, was the first major international gathering to address issues related to sustainable development at the global level. Participants at UNCED adopted Agenda 21, a plan for achieving sustainable development in the 21st century. Chapter 17 of Agenda 21 called for new and integrated approaches to sustainable development of oceans and coasts, and the Rio Principles on Environment and Development introduced the precautionary principle as a component of new approaches to ocean-related agreements.

Since UNCED, significant progress has been made in the development of legislation, agreements and programmes of action at the international level. The United Nations Convention on the Law of the Sea (UNCLOS) entered into force in 1994, providing an overall framework for other agreements. UNEP's Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), the Convention on Biological Diversity's Jakarta Mandate on the Conservation and Sustainable Use of Marine and Coastal Biological Diversity (Jakarta Mandate) and the United Nations Agreements on Straddling and Highly Migratory Fish Stocks (Fish Stocks Agreements) were all adopted in 1995. UNEP's Regional Seas Programme has continued to guide the process of regional cooperation, and the 1994 Barbados Programme of Action for the Sustainable Development of Small Island Developing States (Barbados Programme of Action) has contributed to an overall strengthening of issues related to small island developing states (SIDS) on the political agenda.

Numerous efforts in capacity building and integrated coastal management (ICM) have also been undertaken at national and local levels, including creation of policy frameworks and establishment of protected areas and conservation projects. Investments by the private sector in partnership with governments, advances in technology and scientific research, and NGO efforts to raise public awareness have all contributed to the evolution of sustainable development and management of coastal and marine areas.

REPORT OF THE CONFERENCE

The Global Conference on Oceans and Coasts at Rio+10: Toward the 2002 WSSD in Johannesburg commenced on Monday, 3 December 2001. It was co-chaired by Patricio Bernal, Executive Secretary of the IOC, and Biliانا Cicin-Sain, Director of the CSMP. Opening speeches and a ministerial panel were followed by five days of panels that featured presentations and discussion on 16 key topics,

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including one day of parallel sessions on Thursday. Members of the Conference Executive Committee summarized each day's proceedings during the following morning's opening session.

On Tuesday, Charles "Bud" Ehler, National Oceanic and Atmospheric Administration (NOAA), offered a tribute in memory of the late Robert Knecht, hailed as the "Father of Coastal Zone Management," for his leadership and landmark contributions to science, policy and politics. On Wednesday afternoon, a Draft Co-Chairs' Report, which was later modified into a Draft Concluding Statement, and preliminary Draft Reports from the Working Groups were distributed. On Friday, the panels concluded and reports from each Working Group were followed by closing remarks. The following report summarizes the Conference proceedings.

WELCOME AND OPENING REMARKS

On Monday, Co-Chair Bernal welcomed participants and noted the presence of ministers and ocean experts from intergovernmental organizations, NGOs and citizen's organizations. He said the Conference would provide an opportunity to discuss progress and propose a way forward, reflecting a shift from the focus on environment seen in 1992 toward incorporation of a new paradigm emphasizing development. He then officially opened the Conference.

Gilles Le Chatelier, Minister of Research, France, stressed the importance of scientific monitoring of oceans and coasts, noting increased funding for new research technologies to monitor ocean activity. He discussed the role of oceans and seas in the carbon cycle, effects of climate change on agriculture and human health and trends in fish stocks and migration. He outlined efforts to monitor ocean and coastal biodiversity, urged reduction of greenhouse gas emissions with a focus on energy consumption and transport, and supported increased efforts to understand local as well as global phenomena. Su Jilan, IOC Chair, welcomed participants on behalf of the IOC and described the organization's role in ocean management. He highlighted the need for intergovernmental coordination, especially in trade and exploitation of ocean resources, and noted ways that the IOC can assist governments in knowledge-sharing and coordination of national efforts.

Co-Chair Cicin-Sain noted that the Conference is not a formal meeting of the world's governments, but an opportunity for a diverse group of experts to make assessments and recommendations to inform the WSSD process. She outlined several factors in the social importance of oceans and coasts and highlighted emerging issues including access to genetic resources, bioprospecting and coastal megacities. Listing many achievements in ocean and coastal management since UNCED, she noted the difficulty of obtaining a clear picture of new funding and changes on the ground. Co-Chair Bernal presented a summary of progress made in each thematic area to be addressed by the Working Groups, including overviews of existing governance frameworks, impacts and needs. He highlighted the need for, *inter alia*: cross-sectoral assessments to improve institutional arrangements; international guidance on bioprospecting; incentives for change to reflect new guidelines and legal developments in ICM; use of existing political and indigenous organizations to guarantee ownership in regional cooperation; capacity building for environmental management and regulatory mechanisms for access; increased domestic resources; and development of social sciences, economic indicators, education and training.

James Greenwood, President, Global Legislators Organization for a Balanced Environment (GLOBE International), gave a special address on legislative perspectives, highlighting GLOBE International's efforts to harmonize national legislation and represent both local and global concerns. He identified land-based sources of pollution (LBS) as a priority problem for coastal and marine ecosystems, discussed the need to educate legislators on addressing such problems through national

implementation of relevant international treaties, and described ongoing activities in cooperation with UNEP, NOAA and others to implement the GPA through legislation on land use and LBS.

PANEL SESSIONS

MINISTERIAL PERSPECTIVES ON OCEANS AND COASTS AT RIO+10: This panel featured ministers from countries recognized for their leadership in ocean and coastal management, to provide national and regional perspectives on progress achieved since UNCED and discuss outstanding challenges. Chair Seoung-Yong Hong, Vice-Minister of Maritime Affairs and Fisheries, Republic of Korea, chaired the panel. He said the 21st century brings a "Blue Revolution," and described symptoms of recent "oceanization" including fisheries development and a paradigm shift in ocean management reflected by the growing number of international agreements on oceans. He outlined national issues, achievements, challenges and governance measures related to oceans and coasts.

Herb Dhaliwal, Minister of Fisheries and Oceans, Canada, presented Canada's vision for coastal management, including cooperative arctic planning, Exclusive Economic Zone (EEZ) management and establishment of marine protected areas (MPAs). He described Canada's ocean strategy and ongoing support of international organizations and agreements, including the GPA, and underscored Canada's continued willingness to support international efforts, including publication of a regular "state of the oceans" report.

Rokhmin Dahuri, Minister of Marine Affairs and Fisheries, Indonesia, contrasted the diverse needs of the high-tech commercial fishing industry with those of traditional fishing communities to illustrate the unique challenges faced by Indonesia. He discussed efforts by the newly-established Ministry of Marine Affairs to define issues, integrate laws and empower local communities, and outlined lessons learned in public policy.

Exequiel Ezcurra, National Institute of Ecology, Mexico, highlighted degradation and exploitation of coasts, lagoons, mangroves and coral reefs. He noted that following UNCED, Mexico created numerous MPAs, funded protection for coastal lagoons and mangrove forests, listed endangered marine species, regulated fisheries and passed new environmental legislation, making provision for the continuation of such efforts.

Otu-Ekong Imeh Okopido, Minister of State, Federal Ministry of Environment, Nigeria, discussed the African Process for the Development and Protection of the Coastal and Marine Environment. He highlighted, *inter alia*, the Nairobi and Abidjan Conventions and the Global Environment Facility (GEF) medium-sized project and land-based activities included in the National Action Programme (NAP). He supported private sector enhancement, stakeholder inclusion and a stronger regional peace process.

Ambassador José Vargas, on behalf of the Minister of Environment, Brazil, outlined his country's physical environment and the governmental framework for coastal and marine management, highlighting the Inter-ministerial Commission for Sea Resources. He described challenges including heavy metal and oil marine pollution, and local and NGO initiatives on ocean and coastal zone issues.

Árni Mathiesen, Minister of Fisheries, Iceland, described the crucial role that fisheries and fish products play in his country, and said Iceland could not afford to make mistakes. Mathiesen discussed the Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem (Reykjavik Conference) held in October 2001, describing its primary outputs and achievements, and highlighted the GPA, supporting its implementation.

Francisco Mabjaia, Vice-Minister for the Coordination of Environmental Action, Mozambique, described the physical and economic characteristics of Mozambique and the marine and coastal problems it

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faces, including biodiversity loss and deterioration of coastal zones resulting from human activities. He traced Mozambican marine and coastal problems to poverty, noting the impact of poverty on natural resource use and described government engagement since UNCED to address these conditions.

Victor Kalyuzhnyi, Deputy Minister of Foreign Affairs of the Russian Federation, noted wider public concern for the environment in Russia since 1992, highlighted the conflict between using and sustaining coastal resources, recognized the need to integrate coastal territories governed by different laws and regulations, and discussed the development of a special draft law on coastal areas.

Ni Yuefeng, State Oceanic Administration, China, discussed China's "Ocean Agenda 21," developed in 1996 to realize the goals of sustainable development and integrated ocean management. He highlighted marine legislation on fisheries, ocean planning and zoning schemes, a national ocean development plan, and a GEF/UNDP/International Maritime Organization (IMO) pilot project on environmental management of the Bohai Sea.

Roberto Tortoli, Italian Ministry of Environment, discussed issues relevant to the Mediterranean Sea and its coasts, noting impacts of oil shipping and tourism. He highlighted a stakeholder agreement that would work to reduce oil spills by banning single-hulled ships, and linked coastal degradation to growing urbanization and intensified fishing.

Victoria Sakell, on behalf of the Minister of Environment, Australia, recounted progress in creating a national sustainable development strategy, a national Oceans Policy and a 1999 Environment Protection and Biodiversity Conservation Act. She advocated increased cooperation at the international level, an integrated approach to an evolving agenda, and strengthening rather than replacing current frameworks.

IMPLEMENTATION AND HARMONIZATION OF INTERNATIONAL AGREEMENTS ON OCEANS AND COASTS: This panel reviewed and analyzed the implementation status of major international agreements related to oceans and coastal areas since UNCED, including UNCLOS, the Convention on Biological Diversity (CBD), the UN Framework Convention on Climate Change (UNFCCC), Chapter 17 of Agenda 21, the Rio Principles and the Fish Stocks Agreements. Chair Daniel Silvestre, Secrétariat Général de la Mer, France, introduced the topic and noted the various agreements and issues they address.

Presentations: Annick de Marffy, UN Office of Legal Affairs, Division for Ocean Affairs and the Law of the Sea, discussed implementation of the Law of the Sea and Related Agreements, stressing the need to move from a sectoral to an integrated approach. She called for implementing relevant decisions taken at the fourth and seventh sessions of the Commission on Sustainable Development (CSD), noted the importance of the GPA and codes of conduct, and encouraged increased involvement of all actors. Barbara Kwiatkowska, Netherlands Institute of the Law of the Sea, discussed peaceful settlement of ocean-related and other environmental disputes under international agreements, highlighting Articles II, III, and LXXIII of the UN Charter relevant to settling to disputes. She analyzed issues pertaining to UNCLOS as components of general international law, highlighted the landmark case of the southern bluefin tuna award and recommended further exploration of international tribunals to settle disputes.

Marjo Vierros, Marine and Coastal Biodiversity Programme, CBD, addressed marine and coastal implementation of the CBD at the national level through the Jakarta Mandate. She presented early results of the second set of national reports on the status of its implementation, which indicate progress in many programme areas including Integrated Marine and Coastal Area Management (IMCAM). Veerle Vandeweerd, GPA Coordination Office, UNEP, described the background of the GPA and identified some key challenges and constraints identified by the

recent intergovernmental review in Montreal, noting "slow but steady progress" on implementation. She outlined several key outcomes of the Montreal meeting, underlining the importance of merging the outputs of that meeting with those of this Conference to present a clear, strong message on oceans at the WSSD.

Jon M. Van Dyke, University of Hawaii, USA, presented a brief history of the precautionary principle and its application and adoption as international law. He listed some of the treaties and conventions working to apply the principle and said that it is now recognized by virtually all international treaties. David Freestone, World Bank, addressed the proliferation of treaties since adoption of UNCLOS, during which time more than 600 international environmental and natural resources agreements have been made. Weighing the costs and benefits of this complex network of agreements, Freestone presented as a case study the framework governing the North Sea and recommended measures to improve harmonization among the various conventions.

Discussion: During the discussion, one participant raised a question on World Trade Organization (WTO) agreements and other agreements that are not explicitly related to, but have an impact on, the coastal environment. Freestone concurred that the issue was a difficult one, but noted that the fora on trade and environment would propose divergent solutions. Another participant added that the WTO has now agreed to allow speakers and to further cooperate with multilateral environmental agreements (MEAs). Van Dyke noted that the precautionary approach is incorporated into WTO dispute resolution, although tensions still exist and the international community must first reach consensus on conflicting issues before they will be addressed by the WTO. Responding to a question on development of networks and protected areas, Freestone said synergies could prevent gaps in projects, i.e. with biological corridors. One participant asked whether harmonization would take place among regions, noting alterations to Regional Seas Conventions based on shared reports of lessons learned. Another questioned the burden of national reporting and implementation of national agreements on small governments. Vandeweerd responded that the emerging consensus was to improve environmental governance, including "clustering" to coordinate issues, functions and regions to improve reporting, decrease the number of meetings and diminish burdens placed on governments.

On the issue of capacity building in legal and policy fields raised by one participant, Chair Silvestre noted that advances were taking place as needed, though another participant disagreed, calling for this issue to be placed on the global agenda. Using UNCLOS as an example, Van Dyke said loss of institutional memory over time requires a new generation of minds to understand how to apply international law. Vandeweerd noted UNEP's focus on compliance and enforcement rather than capacity building. Freestone added that capacity building within nations is a complex endeavor and requires time. One participant proposed an integrated approach to conceptualizing oceanic systems, and Marffy agreed that efforts to address ocean issues should be comprehensive and advocated concurrent activity at all levels. She also clarified a point on implementation, noting success at the international level with the general framework of UNCLOS, and stating that the key issue now is to implant this plethora of agreements at the national level in the form of legislation. Another participant discussed development of regional seas and action plans, urged reconsideration of conventions to develop better responses to emerging issues, and highlighted twinning arrangements between developed and developing countries.

PATTERNS AND ISSUES IN DONOR INVESTMENTS IN OCEANS AND COASTS: This panel featured representatives from major donor institutions and analyzed implementation of effective and sustainable projects. Chair Indumathie Hewawasam, World Bank, asked panelists to assess experiences, present lessons learned and identify recommendations on donor investments in oceans and coasts.

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Presentations: Hiroshi Terashima, Department of Maritime Affairs, the Nippon Foundation, discussed priorities in grant-making for ocean and coastal management from the NGO perspective. He described priority areas at the national, regional and local levels as well as NGO initiatives and outlined the Nippon Foundation's grant-making philosophy. Phil Reynolds, Water Program, UNDP, noted continuing UNDP involvement in ocean and coastal management, highlighting renewed vitality in this area. He outlined positive developments, disappointments and new problems since UNCED, and listed concrete recommendations for improved ocean and coastal management.

Christos Fragakis, European Commission, discussed progress achieved on oceanic and coastal research within the European Community's Framework Programmes since 1992. He outlined large-scale regional and thematic projects, strategically themed clusters of projects and narrowly focused individual projects. He advocated consolidation and integration of European research and promotion of a unified European research policy. Lennox Hinds, Canadian International Development Agency, discussed integration of Regional Indigenous Organizations (RIOs) for the management of oceans and coasts, highlighting the achievements of programmes developed by the Association of Southeast Asian Nations (ASEAN), the Caribbean Community (CARICOM) and the Pacific Island Forum (PIF). He defined successes in leadership, ownership and management, noted challenges, and recommended RIOs as appropriate long-term mechanisms for coastal and marine management.

Peter King, Asian Development Bank (ADB), discussed the role of the ADB in promoting ocean and coastal development, stressing the need for accurate data to assess overall degradation of ecosystems in the region. He presented the ADB's efforts to mitigate poverty through policy, legal and institutional frameworks, and advocated cooperation between North and South in developing a new paradigm to address the ocean as the last frontier of development, in which all countries share equal partnership and responsibility. David Freestone, World Bank, highlighted the concurrent GEF Third Replenishment Meeting, noted scales of available funding, and said 17-20% of funding is allocated to international waters. He also highlighted recent expenditures of the World Bank on marine and coastal issues and noted contributions made by Japan that are earmarked for fisheries.

Discussion: A participant asked for elaboration on public-private partnerships, in response to which Hinds praised a marine assessment program carried out by private vessels but said traditional programs like enforcement should remain within the public sector. Other participants noted the World Bank's carbon fund, which raises money from private and public sector sources, and said ecotourism presents an opportunity to merge resource management and for-profit activities. One participant noted that the Central and Eastern European Environmental Investment Fund has a combination of semi-public and private ownership and invests in private companies that control or improve the environment, representing a unique partnership between the sectors. A developing country participant noted difficulties with conflicting procedures imposed by donors for project funding and non-sustainability of programs. Chair Hewawasam responded, citing the World Bank's systematic approach based on Poverty Reduction Strategy Papers (PRSPs) and recommending that the speaker work to ensure coastal and ocean agenda representation in the PRSP process.

THE STATE OF THE OCEAN COMMONS: RESULTS OF MAJOR OCEAN RESEARCH PROGRAMMES: This panel covered aspects of the impacts of oceanic processes on climate and land activities from the perspective of major scientific programmes and institutions addressing land-ocean interactions. Chair Berrien Moore, International Geosphere-Biosphere Programme, introduced the speakers.

Presentations: Véronique Garçon, Centre National de la Recherche Scientifique, discussed the role of oceans in the global carbon cycle. Noting unprecedented planetary increase in carbon levels, she reviewed

research on the global CO₂ budget, ocean chlorophyll distribution, surface air flux and nitrogen fixing and highlighted uncertainties in many research areas. She urged the international community to take action in addressing global changes identified since UNCED. John Cullen, American Society of Limnology and Oceanography (ASLO), addressed scientific and social perspectives on carbon sequestration through ocean fertilization. He reviewed the "iron hypothesis" that iron deficiency limits phytoplankton growth, and the resulting research and popular focus on ocean fertilization to mitigate global warming. Underlining scientific uncertainty, he presented ASLO's recommendation that ocean fertilization never be eligible for carbon sequestration credit.

Kelvin Richards, Southampton Oceanography Centre, discussed the progression in research from the World Ocean Circulation Experiment (WOCE), which used satellites to monitor ocean circulation and create global pictures of heat and freshwater fluxes, to the technologies of CLIVAR, a climate variability and predictability project that incorporates research data on atmosphere and oceans in addressing climatic changes. He stressed the future challenge of determining how oceans are changing. Jean-François Minster, Institut français de recherche pour l'exploitation de la mer (IFREMER), discussed requirements for managing the marine environment, calling for international ocean programmes, shared databases, and tools to monitor impacts and educate relevant actors. He described the technological revolution since UNCED, including improved ocean vessels, *in situ* recordings, satellite mapping, data systems and digital modeling. He also noted the need to set up systems in accordance with international agreements and supported continued evolution of programmes and technologies stressing the challenge of maintaining them over time.

Manuel Barange, Global Ocean Ecosystems Dynamic, noted that drops in global fish stocks have coincided with climate shifts since 1992, raising the question of whether fishing or climate has a greater impact on fish stocks. Looking to the WSSD, he supported, *inter alia*, modeling processes linking climate and ecosystem dynamics at the basin level, studying the role of biodiversity and focusing on sustainability at the ecosystem level.

Discussion: Following the presentation, a participant supported Cullen's position opposing ocean fertilization, noting that it risks limiting the biodiversity of the ocean ecosystem. In response to a question from the floor, Minster stressed the importance of communication with the general public and decision-makers, highlighting the need for ongoing surveillance and effective communication. Barange noted difficulties inherent in integrating up-to-date scientific knowledge into political decision making. One participant noted the crucial role that ocean monitoring systems play in enacting ocean management. Another participant said 50-100 years of sustained scientific observation would be required to effectively answer scientific questions, and highlighted the foundational role of ocean monitoring systems in management, directed research and private enterprise, adding that efforts should be made to help the private sector utilize ocean observation systems in order to garner support for their sustained funding. Chair Moore noted that the highly successful WOCE and Joint Global Ocean Flux Study will be ending in the next year, and suggested that the crucial need for such systems be forwarded to the WSSD process.

BIODIVERSITY, CRITICAL HABITATS AND SPECIES AT RISK: This panel addressed the conservation status of marine biodiversity, critical habitats and species at risk from the perspective of scientific institutions and international organizations. Chair Peter Bridgewater, Man and the Biosphere Programme, UNESCO, introduced the topic and speakers.

Presentations: Salvatore Arico, Man and the Biosphere Programme, UNESCO, outlined the evolution of the international debate on marine and coastal biodiversity since UNCED and discussed biodiversity's relationship to sustainable development. He noted the

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CSD's poor progress and the CBD's failure to incorporate biodiversity into relevant sectoral policies, and stressed the importance of the ecosystem approach in IMCAM plans and programmes. Clive Wilkinson, Global Coral Reef Monitoring Network (GCRMN), Australian Institute of Marine Science, stated that radical action is required to address loss of the world's coral reefs. He presented data on regional declines, proposed a "triage" system for intervention and advocated an integrated approach to coastal management.

Nicolas Pilcher, Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, discussed marine turtle conservation, noting misperceptions of small successes in stabilizing population levels as positive indicators of a situation that is actually worsening. He cited examples of both weak and strong management programmes and called for incorporation of existing knowledge, implementation of existing national and regional plans and commitment to long-term conservation projects. Helene Marsh, James Cook University, Australia, discussed challenges of conserving marine mammals and other species at risk. She described major pressures on populations and proposed solutions to generic environmental problems, noting that the high cultural importance often attached to marine mammals makes them ideal flagships for the advance of these larger environmental solutions.

Francesco Bandarin, World Heritage Centre, UNESCO, addressed the role of the Convention Concerning the Protection of the World, Cultural and Natural Heritage (World Heritage Convention), noting about 40 sites designated for protection that include marine and coastal components. He described some impacts of heritage site designation, including influences on decision making and expansion of funding and staffing. Hans Hermann, North America Commission for Environmental Cooperation, described his organization's role as an "honest broker" between the three countries in North America and as a promoter of public participation, regional action, stakeholder networks and capacity within that area.

Discussion: During the discussion, one participant inquired about the status of the World Heritage Convention and its relationship to the newly-agreed Convention for the Protection of Underwater Heritage (Underwater Heritage Convention). Bandarin noted 167 ratifications, and acknowledged some overlap with the Underwater Heritage Convention that may indicate possibilities for future cooperation. Another participant asked if the World Heritage Convention includes a strategy for monitoring site conservation. Bandarin said no, but noted that heritage sites may make recommendations to governments and NGOs to produce frameworks for implementation. Responding to a comment on the Convention on Migratory Species (CMS) and the CBD, Arico agreed that conflict between ecosystem approaches and CMS may arise in the future. Marsh said the ecosystem approach should examine the special needs of migratory species as an additional layer of the process. Chair Bridgewater noted awareness of the need to harmonize MEAs and underlined CBD recognition of CMS and the Ramsar Convention on Wetlands. One participant expressed concern on Wilkinson's "triage" concept of categorizing reefs, preferring a focus on MPAs in developing countries and degraded zones. Another questioned coverage and reporting of coral reef monitoring and their possible influences on land-based initiatives. Wilkinson replied that triage was simply a concept, and that the GCRMN is a network—not a process—linking projects and synthesizing existing reports every two years. He also expressed hope that socio-cultural data would be added to current biophysical data to influence land-based initiatives. Several participants commented on the need to provide appropriate alternatives to turtle poaching and non-sustainable traditional fishing practices. Pilcher responded that sea turtle populations are more severely affected by large-scale industries than by local practices, while Marsh conversely noted that commercial fishing has reduced dolphin by-catch but tropical

countries dependent on coastal fisheries for food needed incentives for sustainable management. Many agreed that community involvement in MPAs should be increased to address livelihood concerns.

GLOBAL AND REGIONAL PERSPECTIVES ON ICM: This panel reviewed major ICM efforts from global and regional perspectives and assessed progress made and difficulties encountered by nations in establishing successful regional ICM programmes. Chair Marea Hatzioles, World Bank, presented a brief overview of the widespread acceptance of the ICM concept, contrasting it with the relatively small impact achieved, and focused attention on the need to scale up successful projects.

Presentations: Biliana Cicin-Sain, Center for the Study of Marine Policy, University of Delaware, gave an overview of global trends in ICM, highlighting its exponential growth in the past seven years. She presented observations and recommendations, including: interconnecting ICM teaching and training programs, especially on a regional basis; supporting ICM projects at both national and local levels; and moving beyond the planning phase to full implementation of ICM activities. Eugenio Yunis, World Tourism Organization, highlighted the importance of addressing sustainable development and environmental issues in tourism, especially in developing countries. Noting that tourism typically targets coastal areas, he outlined risk factors and potential benefits of tourism and urged its inclusion in ICM strategies.

Chua Thia-Eng, Partnerships in Environmental Management for the Seas of East Asia, addressed the application of ICM in the East Asian Seas in the last two decades. He outlined features including the success of the basic ICM paradigm and non-sustainability of most initiatives, and underlined the importance of tackling urban and coastal poverty in developing countries. Indumathie Hewawasam, World Bank, discussed the Africa region's coastal management strategies. Noting the general lack of any ICM framework on the continent, she described challenges including population and resource pressures and the World Bank's response in working primarily with local level demand to develop strategies and projects for ICM.

Walter Couto discussed the Ecoplata Project, a strategic North-South experiment in managing the coastal zone of Uruguay undertaken in cooperation with Canada, incorporating a balance of institutions, scientists and financial support in a broad-based research initiative to encourage behavioral changes and develop ICM capacity. R. Rajagopalan, International Ocean Institute, India, presented a cross-regional perspective of problems with ICM in coastal communities. He highlighted diminishing resources and increasing poverty as the main problems; proposed micro-credit, fisheries cooperatives, reviving traditional crafts and ecotourism involving local communities as solutions for environmental conservation; and stressed the involvement of women in implementing these solutions.

Yuriy Mikhaylichenko, Ministry of Industry, Science and Technology, Russian Federation, discussed ICM in Eastern Europe, noting a heritage of degradation and economic constraints. He outlined efforts from national and international levels in developing numerous initiatives and projects in the region, and noted that ICM is difficult, that real implementation takes time, and that ICM depends on social responsibility and motivation of decision-makers at local and regional levels. Ivica Trumbic, Regional Activity Centre for Priority Actions Programme, Mediterranean Action Plan, UNEP, discussed problems including pollution and loss of resources, and major trends such as rapid urbanization and increasing tourism in coastal areas. He noted milestones since 1992, highlighted lack of political will and poorly integrated management as obstacles, and underscored recommendations for launching a common policy framework and building support through local action and partnership.

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Discussion: Chua answered a question about economic incentives for ICM, stating that they are difficult to integrate but should be more actively applied in areas such as waste management and stakeholder behavior change, where they have been found effective. A participant asked how countries could be encouraged to seek GEF funding for ecosystem management projects. Hewawasam responded that this area is new to the Bank and that, despite efforts to raise awareness of GEF funding, this project area is not yet fully utilized. In response to a question on specific measures taken in the Mediterranean region, Trumbic said political will can be developed through constant pressure on countries through their political structures. Responding to a question on indicators, Trumbic said data were being collected from countries in the Mediterranean region, while Yunis emphasized the need for local participation in indicator development.

PRIVATE SECTOR INITIATIVES FOR THE SUSTAINABLE DEVELOPMENT OF OCEANS AND COASTS: ISSUES AND OPPORTUNITIES: This panel addressed the role of business, industry and private foundations in ensuring sustainable use of oceans and coasts.

Presentations: Chair Paul Holthus, Marine Aquarium Council, presented an overview of the linkages between business and sustainable ocean management. Noting the need to move beyond "business as usual," he outlined major incentives for implementation and factors in the private sector's assumption of responsibility for provision of sustainable goods, services, products and practices. Geoffrey Lipman, Green Globe 21, described the rapid rise of the tourism industry since UNCED, leading to its current position as the world's largest industry. Outlining both harm and benefit to coastal and marine communities that can result from tourist activity, as well as the particular role of ecotourism in spearheading conservation programs, Lipman said the tourism industry is aware of sustainability considerations and is now faced with the "dangerous opportunity" of choosing to seriously engage in pursuing it.

Tracy London, Oceans Blue Foundation, reported on the Foundation's Cruise Ship Stewardship Initiative and its efforts to foster environmentally responsible tourism through the promotion of corporate social responsibility and the "democratic precautionary principle" of involving all stakeholders to identify and avoid potential environmental harm. Tim Wilkins, International Association of Independent Tanker Owners (INTERTANKO), presented environmental effects of the shipping industry, highlighting invasive species introduction via ballast water and anti-fouling paints, and described industry initiatives to address the problems.

Peter Grimes, Frozen Fish International, outlined how sustainable development is critical to his business' continued health. He presented data on catches in the industry, noted progress and challenges in working toward sustainable supply and presented a roadmap for sustainable fisheries as a necessary corporate commitment. Lisa Dropkin, SeaWeb, discussed creation of markets for sustainable consumer products and leveraging consumer choice in favor of sustainable fisheries use in the USA. Based on consumer and purveyor surveys, she noted low awareness of commercial overfishing as a serious problem but high willingness to engage in environmentally responsible behavior.

Discussion: One participant said certification schemes must incorporate stakeholder input to be credible, and Lipman agreed. Responding to a question on ballast water discharges, Wilkins stated that INTERTANKO takes responsibility for obligations under international treaties. He also replied to a question on how representative this panel is of others in their respective industries, asserting that INTERTANKO represents 75% of the world's private shipping fleets and sets standards that the rest of the shipping industry works to meet. One participant expressed concern over a lack of representation in industry of the needs

of poor countries, highlighting a divide between concepts of needs in developed and developing countries and noting that developed countries have the luxury of consumer choices. Lipman said industry cannot solve problems, but can make contributions to solving them. London emphasized the gaps between developed and developing countries, noting, for example, that Northern tourism both benefits and poses risks to the South.

INTEGRATED COASTAL MANAGEMENT: NATIONAL AND LOCAL PERSPECTIVES ON LINKING EFFORTS TO OUTCOMES: This panel presented specific national and local cases of ICM, analyzing major outcomes, lessons learned, replication of programs, and institutional change. Panel Chair Yves Hénocque, IFREMER, introduced the panel.

Presentations: Stephen Olsen, Coastal Resources Center, University of Rhode Island, USA, presented a breakdown of ICM based on four stages of action: establishing machinery for sustainable development; reducing and mitigating behavior; improving environmental and resource quality; and ensuring the sustainability of achievements. Drawing on case studies from Tanzania and Ecuador, he assessed progress to date under this framework. Jeremiah Daffa, National Environment Managing Council, Tanzania, outlined the Tanzanian context for ICM and offered a perspective on local ICM programs, including marine parks and coastal management. He described the need to manage the growing development of coastal zones and efforts to do so through the Tanzania Coastal Management Partnership.

Chandrica Sharma, International Collective in Support of Fishworkers, drew on the outcomes of two multi-stakeholder workshops to address threats to coastal ecosystems and impacts of the fisheries sector in South Asia. She noted, *inter alia*, the contribution of equipment introduced in the 1970s to over-exploitation of marine resources and lack of government regulation. Sharma then outlined national actions throughout the region to affect environmental and resource management. Camille Mageau, Department of Fisheries and Oceans, Canada, explained that Canada's approach to ICM is based on a geographic framework of regional and local management areas, comprising multiple economic zones and recognizing continuity between land- and marine-based ecosystems. She outlined lessons learned in the ICM process, including the importance of community support, a strong scientific basis and clear objectives in addressing multiple human impacts.

Diane James, Victorian Coastal Council, offered an Australian perspective of ICM, contrasting planning and management policies at the state and national levels. She focused on the development of ICM in Victoria, noting challenges in coordination of responsible authorities and stressing the need for a bipartisan, long-term commitment to create a regionally integrated cross-sectoral framework. Bambang Wamyudi, on behalf of the Minister of Marine Affairs and Fisheries, Indonesia, discussed decentralization of management and financial authorities in Indonesia and highlighted recognition of the need to integrate coastal governance. He described progress in developing an institutional framework through the newly-created Ministry, proposed a "nested" concept for developing national coastal legislation through coordination of regional frameworks, and stressed the difficult but important task of ICM implementation.

Discussion: In response to a question, Olsen highlighted the importance of national governments supporting local efforts. He said that in addition to monitoring environmental efforts, it is necessary to monitor governments and set baselines for governance in each action stage. Hewawasam asked what young democracies could do to quickly show results of ICM on the ground, and Olsen responded that clarification of means to make Agenda 21 operational could aid governments in implementing ICM.

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NATIONAL OCEAN POLICY AND PLANNING AND MANAGEMENT OF EXCLUSIVE ECONOMIC ZONES: This panel addressed national planning for ocean conservation and development, including policies, projects and planning for use and conservation of EEZs. Panel Chair Evelyne Meltzer, Department of Fisheries and Oceans, Canada, introduced the speakers.

Presentations: Veronica Sakell, National Oceans Office, Australia, discussed the implementation of Australia's Oceans Policy, launched in 1998, outlining responsibilities for coordinating institutional arrangements and principles of regional marine planning. She highlighted the southeast marine region as an example and stressed the importance of nesting spatial frameworks. Matthew King, Department of Fisheries and Oceans, Canada, discussed the Oceans Act and the policy process and frameworks developed to implement three key programs on MPAs, integrated management and marine environmental quality. Highlighting lessons learned, he stressed collaboration and allowing time for change to help facilitate legislative implementation and advocated horizontal management and relationship building inside government.

Martin Tsamenyi, University of Wollongong, Australia, focused on actions taken by island nations toward EEZ management. As a result of policy coordination in the Pacific islands region, he noted a strengthened political voice at international fora and better coordination of donor assistance, and highlighted challenges of consistent domestic implementation, national dependence on regional institutions and lack of synergy between regional and international agreements. He supported solutions through RIOs, but cautioned that regionalism must not be seen as a substitute for national action. Kwang Youl Park, Ministry of Maritime Affairs and Fisheries, Republic of Korea, discussed the new ministry's approach to oceans governance, including sustainable development of marine resources through Ocean Korea 21, Chapter 17 and EEZ planning programmes, and noted the need for harmonizing ministries, achieving progress toward ecosystem-based and precautionary approaches and encouraging development and application of sustainable indicators.

Alf Håkon Hoel, University of Tromsø, Norway, said Norway is a major beneficiary of extended jurisdiction through EEZs and outlined measures for EEZ management through international agreements and domestic responses. He said Norway does not have a comprehensive oceans policy or institutional body dedicated to ocean management but highlighted a research program on EEZ performance. Mao Bin, Representative of the People's Republic of China to the International Seabed Authority, gave a brief history of China's coastal zone management and highlighted government efforts to increase awareness of the marine environment, including formation of a national network for marine environment monitoring and creation of a national ocean development plan and national marine policy. He underlined the importance of collaboration on EEZ management despite disputes on overlapping claims and maritime delineation.

Chair Meltzer presented key points and recommendations compiled by the panel. They emphasized, *inter alia*, that: EEZs should be managed seamlessly with coastal zones; lack of institutional understanding in this new area requires a high threshold of caution in decision making; and harmonization between countries is needed to manage overlapping zones and transboundary effects. Their recommendations included standardization of ocean reporting and development of an international framework on management and conservation measures.

Discussion: In response to several questions on conflicts of interest in EEZ and coastal zone policy development, Hoel said Norwegian stakeholder viewpoints are currently addressed through an advisory board as part of policy formulation, while Sakell noted that Australia's top-level policy incorporates all viewpoints, allowing value judgments to be made at subsequent levels of decision making. On Canada's approach, King said legislation was developed before policy, which has

allowed a beneficial feedback loop with coastal residents for incorporation of stakeholder views. He further noted that a highly consultative method based on relationship building has facilitated problem solving in coastal zone management. One participant questioned the linking of EEZ and coastal zone management, noting the potentially detrimental effects of individual national interests on EEZs. Another inquired about Norway's plans to develop a comprehensive oceans policy, to which Hoel responded that development of such a policy is underway. In response to a comment on the importance of regionalism, especially in the Pacific Islands area, Tsamenyi recognized its important role but said regionalism cannot address all aspects of EEZ management because concrete decisions can only be made at the national level. He highlighted the challenge of incorporating indigenous organizations into national level decision making.

FISHERIES AND AQUACULTURE: A SUSTAINABLE USE PERSPECTIVE FOR AREAS OF NATIONAL JURISDICTION AND THE HIGH SEAS: This panel addressed major issues related to marine fishing activities and the development of coastal and oceanic aquaculture around the world. Panel Chair Moritaka Hayashi, Waseda University School of Law, Japan, introduced the speakers.

Presentations: Serge Garcia, Fisheries Resources and Environmental Division, UN Food and Agriculture Organization (FAO), presented a status report on central issues in global fisheries, including overfishing, overcapacity, the harmful role of subsidies and poor statistics and monitoring, and listed new initiatives to address these problems. Despite his characterization of the disturbing state of affairs in fisheries, Garcia said the necessary tools for positive change are in place. Moritaka Hayashi, Waseda University School of Law, Japan, reviewed progress achieved on sustainable use and conservation of high seas living resources, noting the concept of sustainable use has been adopted by several conventions and become the objective of management regimes of migratory and straddling fish stocks. He recommended: wider dissemination of codes of conduct; an FAO compliance agreement review; creation of an FAO-WTO working group to address conflict with trade-related measures; incorporation of the work of regional fishing bodies into the global fisheries forum; and global attention to the emerging issue of exploitation of genetic resources from deep seabeds.

Anamarija Frankic, Ministry of Environmental Protection and Physical Planning, Croatia, defined sustainable aquaculture as a fast-growing industry with increasing consumer demand for its environmentally sustainable product. She noted the expansion of aquaculture, particularly in Southeast Asia, in response to negative environmental pressures and changing coastal conditions, and called for, *inter alia*, increased proactive efforts toward implementation based on integrated principles of sustainability. Matthew Gianni, Greenpeace International, discussed the threat to oceans and seas from overfishing, highlighting emerging problems such as lack of fishing regulation of high seas seamounts, deep sea ridges and plateaus. He identified positive developments since UNCED, including strengthened international law, creation of the International Tribunal for the Law of the Sea and regional fisheries management, and recommended further implementation of international agreements, seafood industry responsibility, high seas MPAs and restrictions on release of genetically modified organisms into the marine environment.

Pietro Parravano, World Forum of Fish Harvesters and Fish Workers, outlined problems in fisheries and described means to address them including improved science and enforcement measures, integrated management and professional development among fishermen. He said trade regulations should also be improved, and sustainable practices rewarded in the marketplace. Jóhann Sigurjónsson, Marine Research Institute, Iceland, reported on the Reykjavik Conference. He surveyed considerations of the ecosystem approach in fisheries management and

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stakeholder views, and highlighted conclusions from the Conference that overfishing is driven by overcapacity and must be addressed, and that incentives are needed for rationalization under rights-based fishing.

Daniel Pauly, Fisheries Centre, University of British Columbia, Canada, presented problems in fisheries that are hidden by common statistics. He showed that, contrary to popular belief, the global catch has been decreasing since the 1980s, and addressed "fishing down marine food webs," whereby volume remains stable but fisheries' catches are based on organisms lower on the food web than were previously caught. He also addressed subsidies and highlighted problems on the horizon with "farming up the food web."

Discussion: Garcia responded to a question on employing the precautionary approach in all international agreements, cautioning that it should be dealt with on a case-by-case basis. One participant endorsed the panel's "realistically" pessimistic views on fisheries, and agreed that overcapacity drives overfishing. Another questioned relationships among subsidies, capacity and demand in developed and developing country markets, and Pauly highlighted the problem of subsidies supporting overcapacity and thus, overfishing. Another participant suggested that the best way to begin restoring capacity would be to implement existing agreements, and Sigurjónsson responded by stressing the need for reduced fishing fleet capacities.

PRESENT STATUS AND FUTURE DIRECTIONS IN MARINE PROTECTED AREAS: This panel addressed scientific and political aspects of creating, implementing, managing and evaluating MPAs, as well as integration of MPAs in coastal management programs and establishment of MPAs in the high seas.

Presentations: Panel Chair Richard Kenchington, Marine and Maritime Policy Centre, University of Wollongong, Australia, provided an overview of MPA category designations, noting the characteristics of each in terms of environmental protection and usage characteristics. He described factors in MPA category designation and problems in MPA management. Charles "Bud" Ehler, International Union for the Conservation of Nature (IUCN) World Commission on Protected Areas, discussed the global status of MPAs. He noted that only 1% of ocean areas are currently designated as MPAs, their current management is mixed and many are still "paper parks." He supported, *inter alia*, a globally representative system of MPAs and development of international guidelines for effective MPA management based on 60 newly developed indicators. He also recommended establishing MPAs with regional connectivity, strengthened science and compliance, as well as contributions of local communities, NGOs and the private sector to protect and manage them.

Charlotte de Fontaubert, Greenpeace USA, presented a paper by Tundi Agardy, Sound Seas, on making MPAs work for people and nature. Raising the question of whether MPAs are created for pure conservation objectives or to also serve people, she noted the potential of MPAs to integrate management across landscapes, provide numerous benefits and meet different needs. She emphasized stakeholder involvement, suggested scaling-up from local MPAs to create multiple-use MPA networks incorporating corridor approaches and challenged governments and multilateral institutions to harmonize top-down and bottom-up approaches. Charlotte de Fontaubert presented the issue of establishing MPAs in the high seas, characterizing these areas as lacking in legal protection and susceptible to new and expanded fisheries and exploitation of minerals and threatened species. She described the mandate for their establishment as contained in Agenda 21, the UNCLOS framework and the Fish Stocks Agreements, and invoked the precautionary approach in preventing repeats of past disasters in coastal and marine ecosystem management. She said creation of high seas MPAs would constitute a proactive approach to the evolution of international law, emphasized avoidance of social development based on resource exploitation, and recognized that protecting marine environments and social development are not mutually exclusive.

David Souter, International Coral Reef Initiative Secretariat, reminded participants of the value of coral reefs, including their function as fish hatcheries and as diverse marine ecosystems. He listed evidence of human-induced degradation, highlighting coral bleaching from increased sea temperatures, and proposed actions to mitigate damage to coral reefs. He appealed for the issue to be prioritized at the WSSD.

Discussion: Discussion focused on high seas MPAs, with participants raising questions on priority areas for MPA creation, enforcement and international support. De Fontaubert said little is known on which sites should be prioritized for protection, but as the first high seas MPA would undoubtedly act as a beacon for fisheries pirates, the first actions should not be taken in the most valuable areas. On enforcement of MPAs on the high seas, de Fontaubert outlined two basic options: letting groups of countries recognize MPAs that would be slowly adopted by international law, or attempting to create MPAs from existing international law. Noting that UNCLOS is the relevant framework for enforcement, she said it might be amended for MPA purposes. A participant noted that significant government support existed for the idea of high seas MPAs in 1994, when the concept was discussed at the Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks. One participant noted the importance of MPAs for developing countries that depend on fish stocks for food security, supporting their inclusion in the debate. Another questioned how legislation might be written to create MPAs but allow for revisions once more is known on effective management practices, and de Fontaubert commented for Agardy on the effectiveness of involving MPA managers in indicator development, while Ehler noted the need for social as well as scientific indicators on MPA effectiveness.

STATUS OF AND PROSPECTS FOR THE MARINE ENVIRONMENT: This panel examined the effects of human activities on coastal and marine environments and the effectiveness of major international and regional programmes to protect them. Chair Victor Sebek, Advisory Committee on Protection of the Sea, introduced the panel.

Presentations: Robert Duce, Texas A&M University, USA, presented the Group of Experts on the Scientific Aspects of Marine Environmental Protection report on Protecting the Ocean from Land-based Activities. He highlighted destruction and alteration of habitats, destructive fishing, sewage and eutrophication as major global threats, identified emerging problems and suggested means of improving global marine environment assessments. Sian Pullen, Marine Conservation Program, WWF UK, presented five steps to an ecosystem approach for managing demands on marine environments: development of a common vision for achievements; assessment of resources; establishment of decision-making mechanisms; identification of delivery tools; and development of a strategy for delivery.

Olof Linden, University of Kalmar, Sweden, presented the Global International Waters Assessment (GIWA), a UNEP-led program that assesses the state of the oceans and methodically identifies priority issues from a combined environmental and socio-economic perspective. He noted that the problems, results and policy prescriptions identified by GIWA are unlikely to be groundbreaking but that the protocol for comparative analysis over time and scale provides a useful framework for management. Chris Crossland, Land-Ocean Interactions in the Coastal Zone, outlined pressures on coastal zones, bringing together data on natural and climatic change, anthropogenic environmental effects and population pressures. He noted challenges for science in coastal zone research, including application of integrated approaches, non-linearity in relevant systems, and improved data and data access.

Allan Robinson, Department of Earth and Planetary Sciences, Harvard University, USA, addressed scientific complexity in coastal ocean systems. He said coastal ocean science examines interdisciplinary processes that work on multiple, interactive scales of space and time with bi-directional feedbacks, and highlighted the sensitivity of

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these processes to isolated events. Robinson presented advances in assessment tools including new realistic, interdisciplinary numerical modeling with data assimilation. Niels Daan, Netherlands Institute for Fisheries Research, discussed the framework for qualitative and quantitative assessment of North Sea marine populations established by the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention). He focused on the development by scientists of indicators, objectives and methods for implementation, and highlighted problems in the process, including: dangers in legislating quantitative targets; difficulty in addressing both highly technical scientific issues and policy; and the need for continued evaluation and adjustment of indicators.

Discussion: One participant asked panelists to address how the marine environment today compares to that of ten years ago, and Crossland said the situation is worse today because governance measures have not yet had an impact and scientific knowledge is not applied in many areas of the world. He called Agenda 21 a “gabfest” and highlighted the urgent need to address inequality of wealth and coastal zone problems. He elaborated that language and communication problems inhibit the political community, while lack of engagement in local communities hinders scientists. Another participant addressed the negative tone of the presentations overall, suggesting that science should address what can be done rather than simply restate the problem. Chair Sebek agreed, and Robinson said many scientists have an interest in communicating their more positive views. Participants discussed ocean maps, and Pullen expressed frustration at the paucity of maps illustrating complete oceanic systems.

ISSUES IN SMALL ISLAND DEVELOPING STATES: This panel discussed major issues related to environmental protection and sustainable development of coastal and ocean resources in SIDS. Chair Tamari'i Tutangata, South Pacific Regional Environment Programme (SPREP), introduced the panel.

Presentations: Ambassador Tuiloma Neroni Slade, Alliance of Small Island Developing States (AOSIS), gave an overview of regional cooperation among SIDS since UNCED, noting that progress may have been made since Agenda 21 but the list of tasks that remain is still “formidable.” He highlighted, *inter alia*, national responsibility for sustainable development, adding that SIDS must leverage technology to achieve their goals. Robin South, International Ocean Institute, University of the South Pacific, Fiji, discussed issues that continue to threaten marine environments in the Pacific islands region, including biodiversity loss and threats to water resources, and noted growing difficulties with the rapid transition from a subsistence to a cash economy. He also outlined guiding principles of the proposed Pacific Islands Regional Ocean Policy.

Nelson Andrade, Caribbean Environment Programme (CEP), UNEP, outlined accomplishments and constraints in the Caribbean region since UNCED, highlighting adoption of the CEP Action Plan and ICM activities coordinated at the national and regional levels. Dirk Troost, Environment and Development in Coastal Regions and in Small Islands (CSI), UNESCO, and Gillian Cambers, CSI, UNESCO, presented their paper on inter-regional initiatives for sustainable small island development. Troost addressed the benefits of inter-regional networking, and Cambers presented the results of a workshop on ethical practice for donors and investors, which included findings that recipient countries should prepare and regularly update funding priorities, and be free to choose projects for participation.

Discussion: Participants addressed the extent to which island states can transfer responsibility for their problems to other countries, with one person noting that island states are sometimes expected to “drown with dignity” rather than address those responsible for global change. Slade said that historical and legal roles should not be forgotten, but stressed the need to focus on local capacity to address island state problems. As an example of this, he said island states could continue to raise

questions on fossil fuel dependence, while contributing to research and development for alternative solutions. Chair Tutangata highlighted the need for telecommunications advances and other national planning, and advocated incorporation of lessons learned since UNCED into national structures.

BUILDING CAPACITY FOR IMPROVED OCEAN AND COASTAL MANAGEMENT: This panel featured representatives from the scientific, academic and political arenas, and divided discussions into three segments. Conference Co-Chair Bernal introduced speakers and guided the discussions in the first two segments. Angus McEwan chaired the third.

Presentations on Building Scientific and Technological Capacity for Ocean and Coastal Management (OCM): Angus McEwan, Bureau of Meteorology, Australia, discussed the evolution, themes and components of the Global Ocean Observing System (GOOS) as a comprehensive system to structure the world's ocean-observing activities, emphasizing its possibilities as an integral component of sustainable development. Robert Kay, Kay Consulting, discussed the potential of the Internet as a transformative tool to revolutionize OCM in the next ten years, particularly with regard to communication among stakeholders. He highlighted the digital divide as a key social issue.

Peter Dexter, Ocean Affairs Division, World Meteorological Organization (WMO), discussed progress since UNCED in developing operational oceanography and meteorology into applied observations, and recognized projects like GOOS as essential to further cooperation in creating new systems to merge the two disciplines into one nested model. Richard Pickrill, Natural Resources, Canada, discussed mapping technologies to aid ocean decision making and management, using data examples to illustrate perspectives of geology, geography and hydrology, and highlighting Canada's new Seabed Resource Mapping Programme (SeaMap).

Chair Bernal raised the question of how to develop sustained investment strategies for such initiatives and make them accessible, noting that the future sustainable development of global systems requires increased use of technology. He proposed greater private funding; urged involvement of users in increasing and defining technology's role; and defined challenges of developing products for environments, societies and economies and developing capacity for assimilation of such products into society. He lauded GOOS as a unified, permanent, global public service for data and information exchange.

Discussion: One participant noted the inability of many countries to use these models due to lack of infrastructure and funding to develop them. McEwan acknowledged that such issues are important although often overlooked by scientists. Responding to a comment stressing the need for cooperation, Dexter noted an overall willingness to form partnerships, and Chair Bernal underscored remote impacts.

Presentations on Applications of the Social Sciences to OCM Programmes: Stefano Belfiore, CSMP, related the importance of education and training for capacity building and ICM, describing the human components of capacity building through activities such as workshops, degree programs, research centers and specific efforts to identify and address the need for ICM-related capacity building around the world. Hance Smith, Cardiff University, UK, presented his research on the role of the social sciences in capacity building. He focused on the social sciences as models of human interaction and OCM as a technological as well as general management approach, and examined how social science feeds into capacity building.

Cuahtémoc León, Programa LEAD (Leadership for Environment and Development Program), Mexico, explored: educational reform in a socio-economically and culturally asymmetric world; new cultural approaches and cross-cultural communication skills; individual values versus collective values; and differences in cultural meaning and significance of coastal areas. Laure Ledoux, University of East Anglia, UK,

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discussed challenges in assigning value to ocean and coastal resources, goods and services for decision making and capacity building, and outlined research on translating ecosystem information and functions into socio-economic applications.

Moira McConnell, World Marine University, Sweden, discussed capacity building for improving OCM in the shipping industry. She noted issues such as transfer of invasive species that could be addressed through capacity building for sustainable development in the industry, and called for increased integration of trade and development activities and concepts.

Discussion: Participants highlighted additional efforts in the social science arena to address sustainable development, and one questioned how to open processes to the developing world. Ledoux stressed development of methodologies, noted challenges of data collection, and suggested alternatives to economic valuation of resources. On a comment regarding uncertainty, Ledoux noted that the precautionary principle has affected cost-benefit analyses.

Presentations on Emerging Directions in Capacity Building:

Enir Reis, Train-Sea-Coast Programme, Brazil, explained this programme's purpose in building local-level capacity in response to Agenda 21, providing training courses in ICM in cooperation with other institutions, and described successful scaling-up to the national level. Rejoice Mabudafhasi, Department of Environmental Affairs and Tourism, South Africa, described collective WSSD inputs as part of integrative community planning processes that would lead to a sustainable vision. She supported: policy planning from the ground up; integrated projects, programmes and planning frameworks; equitable access to coastal resources; promotion of sustainable livelihoods for the underprivileged; reconciliation of intended funding; and stronger political will for sustainable development.

Guillermo García Montero, National Oceanographic Committee, Cuba, stated that a holistic approach is crucial for building sustained regional capacity, and presented the case of the Caribbean region as a social exercise in ICM, guided by science to achieve local interests and meet regional goals. Gunnar Kullenberg, International Ocean Institute (IOI), explained the virtual university approach, which uses new technologies, electronic information flows and research networks to promote interdisciplinary education. He envisioned a gradual development process to "radiate education out to all."

Geoffrey Wescott, Deakin University, Australia, described examples of partnerships and initiatives to illustrate community, government and universities working together. He reminded participants to keep the message simple, ask users what they want, use local experts whenever possible, engage the private sector and move beyond simple learning and teaching strategies. Mario Ruivo, Intergovernmental Oceanographic Commission, Portugal, discussed the concept of an ocean observatory to monitor global trends, contribute to better governance on ocean affairs and foster compliance of UNCLOS without duplication of effort. Such an endeavor would incorporate an inter-sectoral view and serve as a "collective consciousness of society" to create conditions for peaceful and sustainable development.

Discussion: Participants discussed challenges of effective communication in local languages, and means to sustain traditional knowledge. Kullenberg and Mabudafhasi noted the need to mobilize public opinion, make news available and raise awareness. Ruivo highlighted world exhibitions, noting the success of the International Year of the Ocean in 1998 in sensitizing public opinion. Others stressed the need for focus, training and inclusive capacity building.

REGIONAL OCEAN GOVERNANCE: EXAMINING KEY INGREDIENTS FOR SUCCESS IN REGIONAL COOPERATION: This panel examined experiences, discussed lessons learned and

provided recommendations for enhancing regional efforts in OCM. Chair Adalberto Vallega, International Geographic Union, introduced the panel members.

Presentations: Gunnar Kullenberg, IOI, presented IOI's Virtual University, which aims to extend knowledge and information on oceans and coasts to a distributed audience of policymakers, coastal managers, and others who can benefit from their programmes in marine affairs and governance. Chair Vallega presented a paper on ocean regionalization, describing the history of the movement and legal framework as established by UNCLOS and altered through UNCED's focus on the ecosystem-based approach to resource management.

Tamari'i Tutangata, SPREP, presented a paper by Jorge Illueca, Division of Environmental Conventions, UNEP, that addressed Regional Seas Conventions and Action Plans. The paper describes considerations in the future of the Regional Seas Conventions, including the importance of marine pollution control and ICM. Ken Sherman, National Marine Fisheries Service, USA, discussed symptoms and causes of breakdown in coastal and marine ecosystems, and described collaboration with the GEF for management of large marine ecosystems.

Alan Simcock, OSPAR Convention, addressed regional cooperation enhancement using the OSPAR Convention as a case study, and noted the emergence of long-term strategies and broadening of the Convention to cover all human activities. Peter Stenlund, Arctic Council Secretariat, spoke on the Arctic Council, a unique intergovernmental forum that incorporates governments and indigenous peoples' groups on an equal footing. He described agreements and projects undertaken by the Council including the Arctic Climate Impact Assessment, which will deliver its final report in 2004.

Tamari'i Tutangata described the Council of Regional Organizations of the Pacific, outlining key aspects of the regional approach including advantages stemming from economies of scale in centralized training services. He noted the need to distinguish between governance and regional guidance and between national aspirations and community interests.

Miguel Fortes, Marine Science Institute, University of the Philippines, presented information on seagrass and mangrove ecosystems and the benefits they provide. He shared estimates that seagrass beds provide services valued at US \$86,000 per acre per year and mangrove forests at US \$10,000 per hectare per year. Andre-Serge Mikouiza presented a paper on problems of protecting Caspian Sea biodiversity, which focused on specifics of zooplankton and mnemiopsis population change as an indicator of more general biodiversity loss in the region.

Discussion: One participant asked about the future of monetary valuations on natural resources. Fortes responded that resource valuation is controversial, in part because of the scientific uncertainty around the functional processes carried out by ecosystems, and noted that care is needed in using such figures. Another participant asked about the level of consultation and model-sharing between regional organizations. Simcock responded that differences between regional composition of member states is a significant factor in regional organization, as, for example, significantly developed parties can work through distributed structures whereas centralization of regional initiatives is needed for less developed parties. Kullenberg added that some regional structures are organized around a more scientific platform than others, while Tutangata noted the need for strong member support in regional organizations. Stenlund described the Arctic Council's inception during the Soviet Era, when transborder tensions were high and environmental issues were seen as a starting point for cooperation on broader security concerns. In response to a comment that political representatives lack scientific information, Stenlund described an arrangement within the Arctic Council, whereby working groups report regularly to politicians and diplomats on relevant scientific developments.

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EMERGING ISSUES IN OCEAN AND COASTAL MANAGEMENT: This panel addressed global forces and new issues related to marine and coastal areas, including population growth, gender, gaps in international agreements and management of underwater cultural heritage and marine biodiversity. Chair Ed Miles, University of Washington, introduced speakers and moderated the discussion.

Presentations: Haiqing Li, State Oceanic Department, China, gave his personal perspective on the growing issue of coastal megacities, noting that they add problems of freshwater supply, coastal erosion and conflict for coastal resources to the problems of crowding, pollution and waste disposal associated with any large metropolis. Lorena Aguilar Revelo, IUCN, presented statistics on population, gender and coastal demographics, and said gender issues were a reality, not an emerging problem. She underlined the need to, *inter alia*, include women in decision making, supply gender-sensitive family planning and consider the needs of all residents in coastal planning.

Art Hanson, International Institute for Sustainable Development, outlined: the close relationship between trade and sustainable development concerns; recognition of sustainable development within WTO processes; and future directions of the trade and development agenda, including the harmonization of trade, investment and MEAs, and employment of the precautionary principle in trade agreements. He said trade is seen as a wealth-creation process and should be applied to sustainable development. Ben Ahmad Hamzah, Maritime Consultancy Enterprise, Malaysia, discussed international rules and regulations for decommissioning offshore oil installations. He noted a lack of clarity in existing rules, highlighted critical issues including expertise, costs and liability, and noted challenges of updating the legal regime and creating opportunities to produce value from decommissioned installations.

Lyle Glowka, Biodiversity Strategies International, discussed conservation and exploitation of the deep seabed, described the rich biological communities found in hydrothermal vents, noted impacts from research, and proposed voluntary oversight and management by researchers as the best management option for these ecosystems. Jens Koefoed, IMO, discussed the IMO's actions following UNCED, highlighting, *inter alia*, efforts to address harmful aquatic organisms in ballast water, wider ratification and implementation of IMO conventions, and the need for progress in ship recycling.

Ambassador Mary Beth West, Department of State, USA, discussed new technologies and science and new policy directions to improve coastal and marine management, highlighting examples of a draft international plan of action to improve status and trends reporting, the GOOS and the proposed Geographic Information for Sustainable Development (GISD) plan of action. Thomas Malone, Horn Point Laboratory, Center for Environmental Science, USA, elaborated on the coastal module of the GOOS, reiterating that it is not a research program but an organizational effort to cooperate, coordinate and collaborate on OCM. Noting gaps in indicators suggesting that certain assessments are not possible due to limitations, he stressed the need to improve data management, develop applications, and link each to an integrated observing system.

Tullio Scovazzi, University of Milano-Bicocca, Italy, discussed the newly-created Underwater Heritage Convention, noting that it fills gaps in UNCLOS legislation, encourages regional agreements to protect underwater heritage, requires consultation among coastal states on reporting and ensuring protection and adopts measures to address immediate dangers. Nic Bax, Centre for Research on Introduced Marine Pests, Commonwealth Scientific and Industrial Research Organization, discussed the problem of marine pests and the spread of alien species. He noted an exponential increase in introduction, underscored irreversible impacts on other marine conservation efforts, and said the problem is largely being ignored despite efforts to address this problem by the IMO, GloBallast Program and Asia Pacific Economic Cooperation (APEC).

Discussion: One participant noted the many emerging challenges and asked how they could be made "sexy" to attract attention at WSSD. Responses from the panel suggested that: emerging issues must be seen as threats as well as opportunities; organizations must raise awareness; private investment should be encouraged; communication through art and video could be effective; and the issue of underwater cultural heritage was already sufficiently attractive. Responding to a statement emphasizing that existing institutions must develop capacity to understand new problems, Hanson agreed that horizontal linkage issues should be addressed to make infrastructure work more effectively. A participant asked if this implied increased resources for global institutions. West stressed working more effectively with resources currently available. Li noted that capacity building includes infrastructure and said governments must be responsive to social and economic issues. In response to another participant's query about whether efforts to understand problems and agree on appropriate solutions should be supplanted by immediate action, Bax agreed that seeking best solutions to urgent problems was a costly path and supported action with a reasonable cost ratio.

IMPROVEMENTS IN GLOBAL AND REGIONAL OCEAN GOVERNANCE: This panel addressed the need to improve ocean and coastal governance through institutional strengthening, open and transparent decision-making processes, access to scientific data, and cooperation at regional and global levels. Conference Co-Chair Biliiana Cicin-Sain reminded participants of the themes of the panel and introduced the speakers.

Presentations: Ambassador Satya Nandan, International Seabed Authority (ISA), presented a background to the current legal framework of UNCLOS and associated agreements and declarations for ocean governance. He stated that the problem today is not lack of a legal framework for ocean governance, but the need for effective discharge of the responsibilities and obligations that states have toward oceans. He also noted difficulties that arise when governments fail to establish a national institution dedicated to ocean affairs. Finally, he noted emerging trends and recommendations for ocean governance. Elisabeth Mann Borgese, IOI, underlined the importance of peace and security for ocean governance, and the political and strategic context in which it is formed. She expressed optimism at the trend toward decentralization and local community empowerment, and for a new relationship between the public and private sectors. She strongly supported expansion of the consultative process and highlighted the importance of the ISA.

Alan Simcock, Convention for the Protection of the Marine Environment of the North-East Atlantic, provided a detailed review of the United Nations Open-ended Informal Consultative Process on Ocean Affairs and Law of the Sea, (Oceans Process). He traced its history, noting its creation by GA Resolution 64/33 in response to the need for inter-agency coordination, and noted that this process: brings together legal, economic, social, environmental and political spectra; promotes coherence among global and regional organizations; and helps states to synthesize elements and develop unified national approaches addressing the marine environment. Ambassador Tuiloma Neroni Slade, AOSIS, elaborated further on the Oceans Process, focusing on achievements in two consultative sessions since its creation: one with a focus on fisheries and another addressing marine science and cooperation to ensure a sectoral research approach. He highlighted the value of this process, supported its continuation, and noted existing sensitivities in law and policy.

Simon Cripps, WWF International, presented an NGO perspective on global and regional ocean governance. He stated that the greatest problem is lack of political will, and said people must be inspired by oceans issues. He listed ten proposals for concrete action that would constitute a "sea change" in ocean governance, including reduction of harmful fishing subsidies by the EU, implementation of policies to

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protect sea turtles and establishment of MPAs on the high seas. Carl Lundin, Marine Programme, IUCN, addressed private-NGO-government partnerships in governance, describing several projects for joint resource management that show preliminary success. He underlined the need to further address tenure rights, and noted the potential of individual transferable quotas.

Patricia Birnie, London School for Economics and Political Science, UK, discussed the unique harmonization and development of fisheries policies underway in the EC. She explored the creation and limits of partnerships through examples of cooperation and conflict, raising the issue of how far collaboration could go towards implementing conventions and questioning how effective stakeholder involvement could be if stakeholders could not agree. She called for further attention to the precautionary approach, environmental impact assessments (EIAs) of fisheries, the unexpected effects of policy, and defining common but differentiated responsibilities in relation to fisheries and fisheries negotiations. Lee Kimball, Consultant, USA, elaborated on comparative advantages of regional bodies in approaches to ocean governance and new imperatives of integrated approaches to Agenda 21. She proposed concentrating on regional assessments to: define geographic dimensions; develop shared visions; design coherent programmes; strengthen expert networks; expand capacity; and understand how to better use existing tools to strengthen regional platforms and implement conventions.

Discussion: One participant asked for an elaboration on potential future focus areas of the ISA. Borgese noted the emerging issues of marine mining, access to genetic resources and cooperation with the CBD, and how the structure and function of the ISA can best adapt to change. In response to a question on amending UNCLOS to address the precautionary principle, Nandan noted that amendment is an onerous process and should only be undertaken for fundamental changes to the Convention, with questions of implementation addressed in other ways. A participant asked if the EU might address overcapacity problems through market mechanisms, and Birnie replied that although a role exists for the private sector and market mechanisms, dramatic changes to the current system would be difficult and inspection, in particular, has historically encountered resistance. A participant noted that regional, indigenous economic institutions could be an appropriate alternative to reliance on long-established international institutions. Simcock noted that both of these resources should be used, while Slade highlighted the need to ensure that regional organizations do not become too fragmented but retain a wide perspective. Another participant expressed concern that the Conference had not sufficiently addressed human resource capacity in developing countries and showed imbalanced representation. Chair Cicin-Sain expressed regret for this perception, noting that the central motivating factor for the Conference had been human resource development. Birnie noted that developing equitable relationships takes a long time, and Cripps highlighted WWF activities for building capacity in negotiating access agreements. In response to a question on actions to protect sea mounts and vents on the high seas, Cripps responded that a government must take the initiative to establish a pilot-scale MPA. Nandan described provisions to protect the seabed through the process of mining deregulation. Birnie noted the relevance of navigation, as many of the areas in question have a high underwater elevation, and suggested that an international organization might need to address this. Bernal said the richness of the earth's crust was not understood when UNCLOS was agreed and the significant microbial biomass discovered there would require protection.

WORKING GROUP REPORTS

GOVERNANCE IMPROVEMENTS, HARMONIZATION OF INTERNATIONAL AGREEMENTS AND EMERGING ISSUES:

Lee Kimball, Working Group Chair, reported on the Group's meetings

and noted, *inter alia*, the need for: joint implementation by an "oceans cluster" of stakeholders; an integrated vision; joint work programmes; governance in relation to regional participation by stakeholders; regional solutions; and integrated legal frameworks. Ed Miles, Working Group Rapporteur, further noted emerging clusters of issues, such as megacities, megaships and ports. He recalled comments on the inadequacy of current legal structures, noted priority recommendations for science and technical capacity building at the national level in developing countries, and said that given emergent issues, policy development and implementation at the national level is an urgent necessity.

A participant noted the concurrent International Conference on Freshwater held in Bonn, Germany this week, reported that the forum had agreed to recognize "ridge to reef" systems, and called for enhanced coordination with efforts to manage freshwater flows in terms of timing and volumes, not just quality. Another participant's comment highlighted the need for creative ways to address implementation.

The Group's Draft Report presents background, progress and lessons. On governance and harmonization it recommends, *inter alia*:

- encouragement of joint implementation and streamlining of national reporting for clusters of international legal instruments and programmes;
- development of a Global Vision for Oceans, Seas and Coasts;
- promotion of horizontal regional cooperation toward an ecosystem-based approach; and
- creation of national and sub-national frameworks for integrated policies on coastal and marine management.

The Draft Report notes emerging issues in: population and society; environment; trade and industry; use of the sea; science and technology; and security. It recommends that governance frameworks develop legal instruments and measures to address emerging issues, including those beyond national jurisdiction. An annex describes major regional conventions and agreements.

TARGETING DONOR AID AND THE PRIVATE SECTOR:

Working Group Chair Indumathie Hewawasan presented recommendations, including, *inter alia*: capacity building in OCM and across disciplines; improved knowledge management; scaling-up of pilot projects; multiple financing sources and private sector involvement; better targeting of funds, transparency and certification systems; support and funding for regional approaches to ecosystem management; encouraging donors and the private sector to support small projects; public-private partnerships; seed funding for industry transformation; and third-party certification.

One participant recalled a comment from earlier in the week that, having reached a stage of codification, suggested rules should now be made more explicit, and expressed hope that transparency and accountability would apply to the private sector. Another participant suggested monitoring of projects and programmes, and benchmarks to trigger additional funding and track money spent.

The Draft Report presents background and constraints and makes recommendations for: capacity building in integrated ocean and coastal management; moving from pilot projects to comprehensive national programs; multilateral, bilateral and other sources of funding; sustained and innovative financing mechanisms; improved knowledge management in oceans and coastal management; and the private sector.

ASSESSING AND MANAGING THE MARINE ENVIRONMENT: Working Group Chair Gunnar Kullenberg presented the report of the group, highlighting, *inter alia*: the importance of scientific monitoring and assessment systems such as GOOS to sustained development; the need to enhance capacity to predict and manage global change; and new pressures on the marine environment such as freshwater cycle changes.

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The Group's Draft Report introduces and assesses the marine environment, addresses management issues, constraints and challenges, and establishes a vision for the next decade. It presents the following action items:

- prioritize expansion of the GOOS with special emphasis on coastal components;
- advance the scientific understanding of interactions among marine, terrestrial and atmospheric systems and of how human activities influence these interactions;
- improve the linkage between science and management through partnerships for more effective use and exchange of data and information; and
- maintain and broaden scientific studies of anthropogenic change in major biogeochemical cycles.

MARINE BIODIVERSITY AND PROTECTED AREAS:

Working Group Chair Richard Kenchington reported on emergent themes, including the idea that the right to harvest resources is coupled with a responsibility to ensure sustainability. He noted the Group's conclusion that the world has failed thus far in this responsibility and stressed the need for mutually supportive environment and trade measures. On MPAs, he underlined the need for highly protected reference sites.

In discussion, a participant noted the difficulty of satisfying the different administrative and management requirements of site protection programmes. Another commented on the difficulty of maintaining protected areas when the surroundings are subject to extreme poverty. Kenchington concurred with the need to address social conditions together with protected area management.

The Group's Draft Report provides a background on achievements, constraints and challenges relating to marine biodiversity and protected areas, and recommends, *inter alia*: establishment and application of management practices embodying the ecosystem and precautionary approaches; implementation of approaches based on public participation including empowering indigenous and local communities; support research to develop systems of accountability and performance reporting; and cooperation at the national, regional and international levels to design, implement and provide resources to marine protected areas.

ICM: Working Group Rapporteur Steve Olsen noted the evolution of discussions in the group and stated that ICM: has been demonstrated to be an effective mechanism for implementation of international conventions that address governance and coasts; provides an effective policy framework for increasing accountability and transparency and facilitating good governance; and creates enabling conditions for investment opportunities within sustainable development contexts. He recommended continued efforts to create conditions to implement ICM as a nested system of planning and decision making, noting the importance of regional level governance; stressed the need for financial resources to sustain ICM as a long-term process; and proposed taking decisive action on targets for decadal increases in national coastal management. One participant proposed, and others welcomed, inclusion of reference to the issue of disaster management under emerging issues.

The Group's Draft Report presents background, achievements, lessons learned and challenges in this area and calls on governments to:

- develop national coastal and marine policies to implement ICM as a nested system of planning and decision making that operates at a range of spatial scales;
- create policy environments that enable the mobilization of domestic and international financial resources; and
- commit to specified targets for bringing national coastlines entirely under management by 2032.

SUSTAINABLE FISHERIES AND AQUACULTURE: Working Group Chair Kees Zwanenburg highlighted what should have been done since 1992, what should be done now and what should be anticipated in the future. He recounted outstanding problems and said the most immediate requirement is urgent, vigorous and effective implementation of existing agreements. He listed actions to be taken to this end and added new actions to be anticipated related to: monitoring; elimination of illegal, unregulated and unreported fishing; the precautionary approach; and development of capacity for decentralized decision making and incorporating traditional knowledge.

The Group's Draft Report describes the background, achievements and challenges of sustainable fisheries and aquaculture, and recommends that countries, regional fisheries organizations and relevant aquaculture organizations, *inter alia*:

- implement urgently and vigorously the agreed international instruments and plans of action;
- strengthen fisheries and aquaculture monitoring, including the development of ecosystem-based indicators for site suitability and sustainability; and
- recognize that sustainable aquaculture and responsible fisheries are parallel and essential elements of a strategy for global seafood security.

SIDS: Working Group Chair Gerald Miles presented findings, noting political progress at the international level and gaps between international and regional processes. He expressed hope for a comprehensive review of the Barbados Programme of Action in 2004, emphasized defining a national-level approach, noted ongoing efforts to provide a SIDS platform for the WSSD, and said a clear outcome from the WSSD would not be easy to achieve.

The Draft Report provides an overview of SIDS issues, assesses progress, constraints and impediments, and recommends actions on vulnerability, partnerships, local capacity building, financial resources, and international support, including:

- provision of financial and political support for the completion of relevant indices by the international community;
- establishment of legal links between regional and international cooperation on environmental issues, especially those with trans-boundary or global implications;
- strengthening of existing regional capacity building initiatives;
- securing of greater and sustainable returns from ocean resources through improved terms of trade in ocean resources and higher levels of investment in the sector; and
- convening of a full and comprehensive ten-year review of the Barbados Programme of Action.

HUMAN RESOURCE DEVELOPMENT AND CAPACITY BUILDING IN MARINE AND COASTAL MANAGEMENT:

Working Group Facilitator Lynne Hale said that, given the overall recognition by Conference participants of the centrality of capacity building, the Working Group attempted to discover why it was not taking place as well as it should. She discussed, *inter alia*, that capacity building consists not only of education and training, but also of institutional and infrastructure development and creation of an enabling policy environment, and highlighted considerations for sustainable capacity building. Participants noted: the importance of identifying young people for training activities; the need for public awareness; the importance of capacity building among schoolteachers; and the need to address social responsibility without waiting until "Rio+50" to address consumer behavior.

The Group's Draft Report presents an overview of the background, progress, constraints, challenges and vision for human resource development and capacity building in marine and coastal management, and makes various recommendations based on recognition that:

- capacity building consists of human resource development through education and training, institutional and infrastructure

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- development, and development of enabling policy environments;
- the substance of capacity building efforts for OCM must be based on actual needs as determined in each region and nation;
- capacity building programmes should be based at local institutions to maximize local ownership and effectiveness;
- sustaining capacity building programmes is key to continuing forward progress in OCM.

CONCLUSION AND RECOMMENDATIONS

On Friday 7 December, Chair Bernal presented the Co-Chairs' Draft Concluding Statement, which he said would be finalized as a Co-Chairs' Summary by 20 December 2001 and submitted to WSSD PrepCom II.

DRAFT CONCLUDING STATEMENT: The Draft Concluding Statement stresses that the goals of the WSSD will not be met if rapid and effective action is not taken to protect ocean and coastal areas, and calls for a focus at the WSSD on sustainable development of oceans. It highlights the need for:

- development of healthy coastal communities and increased access to sustainable economic livelihoods and wealth derived from the ocean to reduce poverty;
- full implementation and effective compliance with international agreements;
- capacity building for good governance of oceans and coasts;
- linking management of freshwater flows to OCM;
- an ecosystem approach to protecting biodiversity of coastal and marine areas;
- strengthening science-based monitoring and assessment of the oceans;
- linking social welfare and resource conservation to sustainable development; and
- attention to the special case of SIDS.

The statement notes progress in the development of global agreements, increased funding by national and international donors and the accumulation of a significant body of knowledge and practical experience toward OCM. It notes that, despite such progress, ocean resources and environmental conditions have continued to decline, and urges action toward an alternative vision for the future through examination of the root causes of global social and economic crises.

CLOSING STATEMENTS: Chair Cicin-Sain thanked all participants for their active involvement, as well as funding institutions, ministers, the Working Groups, the panels, the IOC and CSMP Secretariats and others, and thanked Co-Chair Bernal for his courage in assembling such a hybrid mix of experts in one forum.

Deputy Minister Rejoice Mabudafhasi, Department of Environmental Affairs and Tourism, South Africa, thanked participants for their presence and for the role they each play on the road to Johannesburg and in sustainable development, noting that this work would affect not just the WSSD but the lives of many people. She also thanked the African ministers, heads of state and others involved in the WSSD process in Africa for their efforts to help renegotiate North-South relationships and reflect a true sense of partnership. She described the complex and challenging legacy of UNCED, and noted emerging issues to be addressed, including: environmental protection for public health and food security; the role of sustainable development of oceans and coasts in political stability; socio-economic and resource development; the need for alternative sources of income generation; projects to develop capacity without marginalizing developing countries; and data management and information sharing to facilitate appropriate partner initiatives and activities coordination. Looking ahead, she said the WSSD should: focus on equity, alleviation of poverty, elimination of food insecurity and regional initiatives; achieve implementation to

combat poverty and impact trade, finance and investment; and emerge with a "Johannesburg Programme of Action" that includes achievable outcomes with reasonable timeframes.

Chair Bernal noted the daunting challenge that lies ahead in maintaining the spirit of this meeting and carrying it to WSSD PrepCom II in January 2002. Chair Cicin-Sain reiterated the new paradigms, conventions and approaches of the past decade, and expressed confidence that motivation, commitment and political will would provide the means to implement them. Chairs Bernal and Cicin-Sain adjourned the Conference at 5:45 pm.

THINGS TO LOOK FOR

GLOBAL MINISTERIAL ENVIRONMENT FORUM/ SEVENTH SPECIAL SESSION OF THE UNEP GOVERNING COUNCIL: This meeting is scheduled to take place from 13-18 February 2002, in Cartagena, Colombia. It will consider transmission to the WSSD preparatory process. For more information contact: Bakery Kante, Division of Policy Development and Law, UNEP; tel: +254-2-624-065; fax: +254-2-622-788; e-mail: bakery.kante@unep.org; Internet: <http://www.unep.org/IEG>

SOLUTIONS TO COASTAL DISASTERS CONFERENCE 2002: This conference will be held from 24-27 February 2002 in San Diego, California. For more information contact: Lesley Ewing; tel: +1-415-904-5291; e-mail: lewing@coastal.ca.gov; Internet: <http://www.asce.org/conferences/>

SEVENTH INTERNATIONAL COASTAL SYMPOSIUM: This international symposium will convene from 25-29 March 2002 in Templepatrick, Northern Ireland. This multi-disciplinary event will seek to promote discussion among scientists, engineers and managers on the latest advances in scientific understanding and engineering, and on environmental issues related to coastal processes. For more information contact: Coastal Research Group; tel: +44-028-70324429; e-mail: ICS2002@ulst.ac.uk; Internet: <http://www.science.ulst.ac.uk/ics2002/>

TWELFTH MEETING OF PARTIES TO THE UN CONVENTION ON THE LAW OF THE SEA: This meeting will convene from 13-24 May 2002 in New York. For more information contact: UN Division for Ocean Affairs and the Law of the Sea; tel: +1-212-963-3968; e-mail: doalos@un.org; Internet: <http://www.un.org/Depts/los/index.htm>

2002 WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT: The 2002 World Summit on Sustainable Development will take place ten years after the Rio Earth Summit (UNCED) in Johannesburg, South Africa, scheduled for 2-11 September 2002. The Preparatory Committee will meet from 28 January-8 February and from 25 March-5 April 2002 at UN headquarters in New York, and from 27 May-7 June 2002 in Indonesia. For more information contact: Andrey Vasilyev, DESA, New York; tel: +1-212-963-5949; fax: +1-212-963-4260; e-mail: vasilyev@un.org. Major groups, contact: Zehra Aydin-Sipos, DESA; tel: +1-212-963-8811; fax: +1-212-963-1267; e-mail: aydin@un.org; Internet: <http://www.johannesburgsummit.org/>

THIRD WORLD WATER FORUM: The Third World Water Forum will take place from 16-23 March 2003 in Kyoto, Japan. The Forum will provide an opportunity for technical and regional organizations and major stakeholders that are actively involved with water problems to present their perspectives. For more information contact: the Third World Water Forum Secretariat; tel: +81-3-5212-1645; fax: +81-3-5212-1649; e-mail: office@water-forum3.com; Internet: <http://www.worldwaterforum.org>

SECOND INTERGOVERNMENTAL REVIEW MEETING ON THE IMPLEMENTATION OF THE GPA: The second IGR meeting will be held in 2006. For more information contact: Veerle Vanderweerd, GPA Coordination Office; tel: +31-70-311-4460; fax: +31-70-345-6648; e-mail: gpa@unep.nl; Internet: <http://www.gpa.unep.org>